

West Riding County Council.



REPORT OF THE COUNTY MEDICAL OFFICER ON ARSENIC IN BEER. 1900-01.

(Presented to the West Riding Sanitary Committee, 15th April, 1901.)

Wakefield :

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REPORT OF THE COUNTY MEDICAL OFFICER

ON

ARSENIC IN BEER.

This Report is compiled for the purpose of placing on record the information in the County Health Department as to the extent to which arsenical beer has been distributed throughout the West Riding, and the amount of illness attributed to such beer.

1. INTRODUCTION.—It is unnecessary to give any details of the origin in Lancashire of what has become known as the arsenic scare, but a few items may, however, be chronicled here as leading up to our action in the West Riding. During the second half of the year 1900 it was observed at the Union Infirmaries of Liverpool, Manchester, and Salford, and at other institutions that an increasing number of cases of “peripheral neuritis” were being admitted. But it was not till the end of November that the cause of this was recognised in beer containing arsenic derived from malt substitutes supplied by a certain firm. The immediate result of this discovery was the destruction of large quantities of beer which were known to have been brewed from materials containing contaminated ingredients. Several deaths in Lancashire were made the subject of inquiry by Coroners’ Courts, and certain prosecutions were also undertaken by Local Authorities in the affected districts charging beersellers with offences against the Sale of Food and Drugs Acts.

2. ACTION IN THE WEST RIDING.—Immediately on the announcement of the Manchester discoveries, I set on foot enquiries with a view of ascertaining whether the West Riding was involved in the mischief, but I was able to gather very little information except of a negative character at that time. Not feeling justified in submitting large numbers of beer samples for analysis, or in purchasing them at random without grounds for suspicion, I communicated with the Medical Officers of Health of the 161 Sanitary Authorities in the West Riding, on the 6th December, asking for information of any cases where there were indications of mischief due to arsenic in beer. As a result of that enquiry I was strengthened in my conclusion that little illness had occurred in the West Riding of the kind experienced in Lancashire. This view appeared also to be confirmed by the fact that during December various Local Authorities in the Riding had submitted a number of samples of beer for analysis with negative results as to arsenic.

The West Riding Sanitary Committee, whose attention I have called to the matter at several meetings, also considered the advisability of communicating directly with the brewers throughout the Riding, but decided not to do so at this stage. By the end of December, however, as a result of many informal enquiries, it was elicited that in several parts of the Administrative County brewers had been using contaminated glucose. I therefore instructed each of the nine inspectors of the County Council to purchase samples of beer in their respective districts and send them for analysis under the Sale of Food and Drugs Acts. The result of such sampling up to the end of March, 1901, is given in tabular form below. It shows that of the 91 samples examined 40 contained arsenic.

Of these 91 samples, however, 24 were second samples purchased from vendors who had previously been found to sell beer containing arsenic. Of the 67 initial samples 25 were arsenical. These figures, it should be noted, do not indicate the relative distribution of arsenical beer throughout the Riding, for the reason that the samples examined were chiefly purchased on suspicion.

Numerous samples of jam, treacle, syrups, and lemonade have been submitted for analysis, but none were found to contain arsenic.

TABLE I.—Summary of Beer Samples submitted to the Public Analyst up to the end of March, 1901.

County Inspectors.	Number of Beer Samples submitted.	Number containing Arsenic.	
		(a) Minute Quantity.	(b) Material Quantity.
J. H. Bundy, Barnsley ...	11	2	5
F. S. Turner, Wakefield ...	6	—	—
H. Gamble, Harrogate ..	8	2	1
H. Newbould, Huddersfield ...	14	—	5
W. H. Wilson, Pontefract ..	5	1	—
J. Wilson, Rotherham ...	12	5	2
J. Duce, Bradford ...	7	2	—
H. Randerson, Skipton ...	16	1	7
H. Hargeaves, Sowerby ...	12	4	3
Total Beer Samples submitted by County Inspectors ...	91	17	23
Total submitted by Local Authorities	171	30	27

The amount of arsenic found by the Public Analyst varied from one-third of a grain per gallon down to a very minute trace. The medical dose of arsenious oxide ranges from $\frac{1}{60}$ to $\frac{1}{15}$ of a grain, so that the maximum dose would be contained in less than a quart of the worst sample examined.

3. METHOD OF SAMPLING.—Entertaining the opinion that the present mischief has been largely accidental, it was considered proper to give notice to the vendors of samples containing arsenic. The word “largely” has been used advisedly, because it has now been ascertained that appreciable traces of arsenic can be obtained from bad coke, even oven coke. The system of sampling adopted by the West Riding Inspectors has been as follows:—In the first instances only a pint of beer has been purchased and forwarded for qualitative analysis as to the presence or absence of arsenic. If proved uncontaminated no further action was called for, but in cases where an affirmative result was obtained, the inspector has immediately left with the vendor a copy of the certificate by way of warning as to the

dangerous nature of the beer. After the lapse of a few days the inspector has called again and purchased with all the formalities of the law a large two-gallon sample for complete analysis. In most cases these secondary samples have been found to be free from arsenic or only slightly contaminated, the brewers having in the interim withdrawn the first lot from sale, and taken energetic measures to re-supply their houses with other beer. In a few instances, however, the second samples have still been found arsenical, and such cases have been considered with a view to legal action. One case has been heard in which the arsenic was in the proportion of one-fourth of a grain to a gallon of the beer. The brewer in supporting the Vendor, denied the use of glucose, and stated that the beer was produced solely from "malt, hops, and invert sugar," and ascribed the presence of arsenic to bad coke in the process of malting. The bench imposed a fine of £20 and costs.

4. SAMPLES TAKEN BY LOCAL SANITARY AUTHORITIES.—On the 11th December, 1900, the Local Government Board addressed a circular letter to every Sanitary Authority pointing out the desirability of submitting samples of beer, jam, syrups, &c., for examination as to arsenic. In consequence of this a goodly number of Sanitary Authorities in the West Riding have had samples analysed. As shown in the foregoing table, out of 171 samples of beer submitted by Local Authorities, 30 contained a minute trace of arsenic and 27 contained a material quantity. It is not possible to show the subsequent action of the various Local Sanitary Authorities in relation to the arsenical samples. In some districts a warning has been served on the brewers and retailers; in one or two instances prosecution ensued, while in several cases the Local Authority have handed the papers to the County Council for further action. In the latter instances the County Inspectors have purchased second samples after the vendors had been notified of the result of the first analysis.

5. ILLNESS NOTED IN THE WEST RIDING.—As the result of my communication with the Medical Officers of Health throughout the Administrative County, I find that in only 12 districts (10 Urban, 2 Rural) out of 161 has there been any illness attributed to arsenical beer, and in only two or three districts has the illness been at all extensive. The total number of cases in the Riding has probably been less than 200 in a population of over $1\frac{1}{2}$ millions, and I have not heard of any death directly ascribed to arsenical poisoning. Personally, I have examined 8 patients, and they were undoubtedly suffering from symptoms attributable to arsenical poisoning, but in several other cases it is doubtful whether alcohol or arsenic was the more potent factor: both act as neurotic poisons. Mention is made in the medical officers' returns of some 35 cases of peripheral neuritis due to other causes.

The following table summarises the information both as to samples found arsenical (whether taken by County Inspectors, Local Authorities, or otherwise) and as to illness noted, showing also the population of the Sanitary Districts concerned:—

TABLE II.

District.	Population 1899.	Number of samples of Beer found to be Arsenical.	Cases of Peripheral Neuritis.	
			(1) Attributable to Beer.	(2) Not attribut- able to Beer, or Doubtful.
Ardsley ...	5,941	2	-	-
Balby-w-Hexthorpe	5,126	1	-	-
Barnsley ...	40,872	6	1	5
Bingley ...	17,794	1	-	-
Brighouse ...	24,420	1	-	-
Burley ...	2,756	-	3	-
Castleford ...	18,040	-	-	3
Darfield ...	4,257	-	-	1
Dodworth ...	3,206	-	-	3
Doncaster ...	30,700	1	-	-
Handsworth ...	13,160	3	-	1
Hebden Bridge ...	8,064	6	-	-
Hipperholme ...	3,654	-	3	-
Holmfirth ...	9,800	5	-	-
Ilkley ...	6,771	10	About 100	1
Keighley ...	40,789	16	A few	-
Knaresborough ...	4,378	1	1	-
Meltham ...	5,290	-	-	1
Mirfield ...	11,846	-	-	1
Mytholmroyd ...	4,298	-	-	1
Normanton ...	12,491	-	-	2
Otley ...	8,833	2	Several	-
Penistone ...	2,829	7	-	-
Rotherham ...	49,200	-	-	1
Saddleworth ...	15,000	-	-	3
Shelf ...	2,500	-	1	-
Shipley ...	24,759	2	-	-
Skipton ...	11,518	1	43	-
Southowram ...	3,076	-	-	1
Sowerby ...	3,762	-	-	A few
Sowerby Bridge ...	12,046			
Stocksbridge ...	6,789	14	-	-
Swinton ...	11,420	-	-	1
Todmorden ...	25,633	5	4	-
Wakefield ...	37,604	1	-	-
Wombwell ...	13,541	3	-	1
Bowland Rural ...	4,889	-	-	-
Pateley Bridge R...	9,000	-	-	4
Rotherham R. ...	16,856	2	-	-
Settle R. ...	14,299	2	-	-
Skipton R. ...	20,488	3	-	-
Thorne R. ...	6,493	-	-	1
Wakefield R. ...	16,934	2	-	-
Wharfedale R. ...	7,592	-	4	-
Wortley R. ...	44,803	-	1	-
		97 in 25 Districts.	Say 170 cases in 12 Districts.	Say 35 cases in 18 Districts.

With regard to the County Boroughs I may say that I have heard unofficially from the several Health Officers to the effect that numerous samples of beer have been analysed, and although in some instances arsenic was detected, still there appears to have been very little illness ascribed to this cause.

7. CONCLUSION. —Whatever may have been the extent of the distribution of arsenical beer in the West Riding, there is no doubt that it has now practically ceased. The recent samples examined have been quite free from arsenic, except in cases of old stock remaining in the hands of the retailer.

The chief point to notice in regard to the West Riding is that there has been very little illness reported although presumably in some localities the amount of arsenic has been considerable. In Manchester the illness was first noticed and then the arsenic, while in the West Riding the order of discovery appears to have been reversed, except in a few places like Keighley and Skipton, and Ilkley, where a number of cases of peripheral neuritis occurred during the summer and autumn of 1900. Referring to the West Riding generally it is clear that the occurrence of beer poisoning has been very limited in degree when compared with the epidemic proportions which obtained in Lancashire and Staffordshire. Whether this is due to the relatively temperate habits of the people, or to the greater immunity against arsenic, or to the restricted use of arsenical glucose by West Riding brewers is not certain. In a few localities, at all events, there is no doubt that poisonous beer has been on sale without any serious epidemic occurring such as took place in Manchester and other places.

JAMES ROBT. KAYE,
County Medical Officer.

Wakefield,
April 10th, 1901.

